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continues to step 908 in which an IR block flag, indicative of a plurality of missed 10 millisecond obstruction pulses, is set. Flow then proceeds through step 910 to step 912 where the 12 millisecond timer is reset. Decision step 914, which is performed after step 912, determines whether it has been more than 500 milliseconds since a valid radio code has been received. If more than 500 milliseconds has transpired, step 916 is performed to clear a radio currently on air flag and an exit is performed. When step 914 determines that 500 milliseconds has not expired, flow proceeds directly to exit step 918.--

R E M A R K S

Notice of Omitted Item(s) mailed on January 30, 2002, stated that FIGS. 9C, 17A-B, 18D, 19D, 20C, 21C, 23A-B and 26 A-B were not present in the application as filed. In fact, no such figures were intended because their contents are included in FIGS. 19B,17,18C,19C,20B, 21B 23 and 26, respectively, as filed in the original filing. The applicants submit a preliminary amendment correcting references to Figs.9C, 17A-B, 18D, 19D, 20C, 21C, 23A-B and 26 A-B in accordance with the drawings. In making these revisions care has been taken to ensure that no new matter has been added to the specification.

The Commissioner is hereby authorized to charge any fees, which may be required in connection with this correspondence, to Deposit Account No. 06-1135.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Page 4, lines 27-28:

-- FIGS. 9A - 9[C]B are flow diagrams of the operation of the rolling code transmitter of FIG. 7; --

Page 5, lines 5-17:

-- [FIGS. 17A and 17B are] FIG. 17 is a flow diagram[s] of the beginning of radio code reception by the controller;

FIGS. 18A-18[D]C are flow diagrams of the reception of the code bites comprising full code words;

FIGS. 19A-19[D]C are flow diagrams of a learning mode of the system;

FIGS.20A-20[C]B are flow diagrams regarding the interpretation of received codes;

FIGS. 21A-21[C]B and FIG. 22 are flow diagrams regarding the interpretation of transmitted codes from keypad type transmitters;

[FIGS. 23A and 23B are] FIG. 23 is a flow diagram of a test radio code subroutine used in the system of Fig. 3; --

Page 5, lines 22-23:

-[FIGS. 26 A and 25B are] FIG. 26 is a flow diagram of a timer interrupt subroutine; --.

Page 10, line 9-33:

- - Referring now to FIGS. 9A [through 9C] and 9B, the flow chart set forth therein describes the operation of the transmitter 30. A rolling code from nonvolatile memory is incremented by three in a step 500, followed by the rolling code being stored for the next transmission from the transmitter when a transmitter button is pushed. The order of the binary digits in the rolling code is inverted or mirrored in a step 504, following which in a step 506, the most significant digit is converted to zero effectively truncating the binary rolling code. The rolling code is then changed to a trinary code having values 0, 1 and 2 and the initial trinary rolling code is set to 0. It may be appreciated that it is trinary code which is actually used

to modify the radio frequency oscillator signal. The bit timing for a trinary code for a 0 is 1.5 milliseconds down time and 0.5 millisecond up time, for a 1, 1 millisecond down and 1 millisecond up and for a 2, 0.5 millisecond down and 1.5 milliseconds up. The up time is actually the active time when carrier is being generated. The down time is inactive when the carrier is cut off. The codes are assembled in two frames, each of 20 trinary bits, with the first frame being identified by a 0.5 millisecond sync bit and the second frame being identified by a 1.5 millisecond sync bit.- -

Page 24, lines 4-23:

- - The primary received code analysis routine performed by microcontroller 85 begins at FIG 17[A] in response to an interrupt generated by a rising or falling edge being received from the receiver 80 at pins P32 and P33. Given the pulse width format of coded signals, the microcontroller maintains active or inactive timers to measure the duration between rising and falling edges of the detected radio signal. Initially, a step 546 is performed when a transition of radio signal is detected and a step 548 follows to capture the inactive timer and perform the clear radio routine. Next, a determination is made in step 550 of whether the transition was a rising or falling edge. When a rising edge is detected, step 552 is next performed in which the captured timer is stored followed by a return in step 554. When a falling edge is detected in step 550, the timer value captured in step 548 is stored (step 556) in the active timer. A decision step 558 is next performed to determine if this is the first portion of a new word. When the bit counter equals "0" this is a first portion in which a sync pulse is expected and the flow proceeds to step 560[(FIG. 17B)].- -

Page 26, line 4 through Page 28, line 6:

- -When step 312 determines that the time difference is not less than the complement of the decision threshold flow proceeds to decision block 316 (FIG. 18[B]<u>A</u>) where the result is compared to the decision threshold. When the result exceeds the decision threshold, a bit having a value 2 has been received and

the flow proceeds via step 318 to the decision step 322. When decision step 316 determines that the result does not exceed the decision threshold, a bit having a value of 1 has been received and flow continues via step 320 to decision step 322.

In step 322, microprocessor 85 identifies if rolling codes are expected. If not, flow proceeds to step 338 (FIG. 18[C]<u>B</u>) where the bit value is stored as a fixed code bit. When rolling codes are expected, flow continues from block 322 to a decision step 324 where the bit count is checked to identify whether a fixed code bit or a rolling code bit is received. When step 324 identifies a rolling code bit, flow proceeds directly to a step 340 (FIG. 18[C]<u>B</u>) to determine whether this is the last bit of a word. When a fixed bit is detected in step 324, its value is stored in a step 326 and a step 328 is performed to identify if the currently received bit is an ID bit. If the bit count identifies an ID bit, a step 330 is performed to store the ID bit and flow proceeds to the storage step 338 [(FIG. 18C)]. When step 328 determines that the currently received bit is not an ID bit, flow continues to step 334 (FIG. 18[C]<u>B</u>) to determine whether the currently received bit is a function bit. If it is a function bit, its value is stored as a function indicator in step 336 and flow continues to step 338 for storage as a fixed code bit. When step 334 indicates that the currently received bit is not a function bit, flow proceeds directly to step 338. After the storage step 338, flow for the fixed bit reception also proceeds to step 340 to determine whether a full word has been received. Such determination is made by comparing the bit counter with the threshold values established for the type of code expected. When less than a word has been received, flow proceeds to step 342 to await other bits.

When a full word has been received, flow proceeds to a step 344 <u>(FIG. 18C),</u> where the blank timer is reset. Thereafter, flow continues to decision step 346 to determine if two full words (a complete code) have been received. When two full words have not been received, flow proceeds to block 348 to await the digits of a new word. When two full words are detected

in step 346, flow proceeds to step 350 (FIG. 18[D]C) to determine whether rolling codes are expected. When rolling codes are not expected, flow continues to step 358. When rolling codes are expected, flow proceeds from step 350 through restoration of the rolling code in a step 352 to a decision step 354 where it is identified if the ID bits indicate a voice/keypad transmitter, e.g., transmitter 34. When a voice/keypad transmitter code is detected, a flag is set in step 356 and flow proceeds to a decision step 362, discussed below. When step 354 indicates that the code is not from a voice/keypad transmitter, flow continues to the decision step 358 to identify whether a vacation flag is set in memory. The vacation flag is set in response to a human activated vacation switch and when the vacation flag is set, no radio codes are allowed to activate the door open while codes from voice/keypad transmitters such as 34 are permitted to activate the system. Accordingly, if a vacation flag is detected in step 358, the code is rejected and a return is performed. When no vacation flag has been set, flow proceeds to a step 362 where it is determined if a receiver learn mode is set. Receiver learn modes can be set by several types of operator interaction. The program switch 151 can be pressed. Also, by preprogramming, microprocessor 85 is instructed to interpret the press and hold of the command and light buttons of the wall control 39 while energizing a code transmitter. Additionally, prior radio commands can place the system in a learn mode. The decision at step 362 is not dependent on how the learn mode is set, but merely on whether a learn mode is requested. At this point it is assumed that a learn mode has been set and flow continues to step 750 (FIG. 19A).--

Page 29, lines 20 through Page 30, line 31:

- -After step 784, flow proceeds to step 786 (FIG. 19[C]B) to determine if the present code is from the keypad transmitter and specifies an input code 0000. If so, the step 787 is executed where the received code is rejected and a return is executed while remaining in the learn mode. When the code

0000 is not present, flow continues to step 788 to find whether a non-enter key (* or #) was pressed. If so, flow proceeds to step 787. If not, flow continues to decision step 789 (FIG.19C) to identify if an open/close/stop transmitter is being learned. When the present learning does not involve an open/close/stop transmitter, flow proceeds to step 792 where the code is written into nonvolatile memory. When step 789 (FIG. 19C) determines that an open/close/stop transmitter is being learned, flow proceeds to step 790 to determine if a key other than the open key is being pressed. If so, flow proceeds to block 789 and if not, flow proceeds to block 792 where the fixed code is stored in nonvolatile memory. After step 792, step 794 is performed to determine if rolling code is the present mode. If not, flow proceeds to step 799 where the light is blinked to indicate the completion of a learn and a return is executed. When step 794 identifies the mode as rolling code, flow proceeds to step 795 where the received rolling code is written into nonvolatile memory in association with the fixed code written in step 792. After step 795, the current transmitter function bytes are read in step 796, modified in step 797 and stored in nonvolatile memory. Following such storage, the work light is blinked in step 799 and a return is executed.

The performance of step 799 concludes the learn function which began when step 362 (FIG. 18[D]C) identified a learn mode. When step 362 does not identify a learn mode, flow proceeds from step 362 to step 402 (FIG. 20A). In step 402 the ID bits of the received code are interpreted to identify whether the code is from a rolling code keypad/voice type transmitter, e.g. 34. If so, flow proceeds to step 450 (FIG. 21A). When the ID bits do not indicate a rolling code keypad/voice entry, flow proceeds to a step 404 where a check is made to see if an 8 second window in which a learn mode may be set exists which was entered from a fixed code keypad transmitter. When the learn mode exists, flow proceeds to step 406 to determine if the operator has entered a special "0000" code. If the special code has been entered, flow proceeds from step 406 to step 410 where

the learn mode is set and an exit performed. When step 406 does not detect the special "0000" code, flow proceeds to a step 408, which step is also entered when no 8 second learn mode was detected in step 404.--

Page 31, lines 22-34:

--When step 426 identifies an open/close/stop command, flow proceeds to step 430 (FIG. 20[C]B) to interpret the command. Step 430 identifies from the function bits of the received code which of the three buttons was pressed. When the open button was pressed, flow proceeds to a step 432 to identify what the present state of the door is. When the door is stopped or at a down limit, step 434 is entered where an up command is issued and exit performed. When step 432 identifies that the door is traveling down, a reverse door command is issued and an exit performed in step 436. In the third case, when step 432 detects the door to be open, step 440 is entered and no command is issued.--

Page 33, lines 8-37:

-- When the performance of step 460 determines that the received user input portion does not match a passcode stored in memory, flow proceeds to step 462 where the received user input portion is compared to temporary user input codes. When step 462 does not discover a match, a step 464 is performed to reject the code and exit. When step 462 identifies a match between a received user input code and a stored temporary password, flow proceeds to step 466 to identify whether the door is at the down limit. If not, flow proceeds to step 472 for the issue of a keypad/voice entry command. When step 466 identifies that the door is closed, a step 468 is performed to identify whether the previously set time or number of uses for the temporary passcode has expired. When step 468 identifies expiration, the step 464 is performed to reject the code and exit. When the temporary passcode has not expired, flow proceeds to step 478 (FIG. 21[C]B) where the type of user temporary passcode, e.g., duration or number of activations, is checked. When step 478 identifies that the received temporary passcode is limited to a number of activations, a step 480 is executed to decrement the remaining

activations and a step 472 is executed to issue an entry command. When step 478 identifies that the received keypad/voice passcode is not based on the number of activations (but instead on the passage of time) flow proceeds from step 478 to the issuance of an entry command in step 472. No special up date is needed for timed temporary passcodes since the microcontroller 85 continuously updates the elapsed time....

Page 34, line 35 through Page 36, line 2 :

--[FIGS. 23A and 23B are] FIG.23 is a flow diagram[s] of a radio code match subroutine. The flow begins at a step 862 where it is determined whether a rolling code is expected or not. When a rolling code is not expected, flow proceeds to a step 866 where a pointer identifies the first radio code stored in nonvolatile memory. When step 866 determines that a rolling code is expected, all transmitter type codes are fetched in a step 864 before beginning the pointer step 866. After step 866, a decision step 868 is performed to determine whether an open/close/stop transmitter is being learned. If so, a step 870 is performed in which the memory code is subtracted from the received code and the flow proceeds to a step 878 to evaluate the result. From step 878 the flow proceeds to a step 878 to evaluate the result. From step 878, the flow proceeds to a step 880 to return the address of the match when the result of the subtraction is less than or equal to two. When the result of the subtraction is not less than or equal to two, the flow continues from step 878 to step 882 to determine if the last memory location is being compared. If the last memory was compared, step 884 is performed to return a "no match."

When step 868 indicates that the system is not learning an open/close/stop transmitter, flow continues to step 872 to determine if the memory code is an open/close/stop code. If it is, flow proceeds through steps to step 874 where the received code is subtracted from the memory code. Thereafter, flow proceeds through step 878 to either step 880 or 882 as above described. When step 872 determines that the current memory code is not an open/close/stop code, flow proceeds to step 876 [(FIG.

23B)]. In step 876 the received code is compared with the code from memory and, if they match, step 880 is performed to return the address of the matching code. When step 876 determines that the compared codes do not match, flow continues to step 882 to determine if the last memory location has been accessed. When the last memory location is not being accessed, the pointer is adjusted to identify the next memory location and the flow returns to step 868 using the contents of the new location. The process continues until a match is found or the last memory location is detected in step 882.--

Page 36, line 22-Page 37 line 9:

--[FIGS. 26A and 26B] <u>FIG. 26</u> show<u>s</u> a timer interrupt subroutine which begins at a step 902 when all software times are updated. Next, flow proceeds to a step 904 to determine whether a 12 millisecond timer has expired. The 12 millisecond timer is used to assure that obstructions which block the light beam in protector 90 and cause the absence of a 10 millisecond obstructive pulse, are rapidly detected. When the 12 millisecond timer has not expired, flow proceeds to a step 914 discussed below. Alternatively, when the timer expires, a step 906 is performed to determine if a break flag, which is set at the first missed pulse, is set. If it is not set, flow proceeds to step 910 in which the break flag is set. If the break flag was detected in step 906, flow continues to step 908 in which an IR block flag, indicative of a plurality of missed 10 millisecond obstruction pulses, is set. Flow then proceeds through step 910 to step 912 where the 12 millisecond timer is reset. Decision step 914, which is performed after step 912, determines whether it has been more than 500 milliseconds since a valid radio code has been received. If more than 500 milliseconds has transpired, step 916 is performed to clear a radio currently on air flag and an exit is performed. When step 914 determines that 500 milliseconds has not expired, flow proceeds directly to exit step 918.--